Miguel Jiménez

Curriculum Vitae[1]

Computer Science Department
University of Victoria
Victoria, Canada
ES, EN, FR (elementary)

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https://github.com/jachinte

Research Interests

My area of research is Software Engineering with a focus on the design and development of architectures and infrastructures for self-adaptive software systems. My research interests include software engineering, self-adaptive systems, models at run-time and domain specific languages. I am currently working towards automated software evolution of cloud software applications through quality-driven continuous experimentation.

Education

2016-Present **Ph.D. Candidate in Computer Science** - University of Victoria, Canada

GPA 3.85/4
Advised by Drs. Hausi Müller and Gabriel Tamura
Thesis topic: Continuous software evolution at run-time

2014-2016 **M.Sc. in Software Engineering** - Universidad Icesi, Colombia

GPA 3.87/4
Advised by Dr. Gabriel Tamura
Thesis: A framework for generating and deploying dynamic performance monitors for self-adaptive software systems

2009-2014 **B.E. in Systems Engineering** - Universidad Icesi, Colombia

GPA 3.21/4 • Engineering Dean's list in semesters VI, VII, VIII and IX
Advised by Angela Villota-Gomez and Dr. Gabriel Tamura
Degree project: PaSCAni: A language for run-time V&V of functional requirements (Spanish)

Awards and Honors

2019 🏆 **Best Poster Presentation**, SEMLA and CSER joint poster session
2018, 2019 **Travel Scholarship**, CRA-URMD Grad Cohort
2017-2019 **UVic Graduate Award**, University of Victoria
2017 **Howard E. Petch Research Scholarship**, University of Victoria
2017-2019 **IBM Advanced Studies Grant**, IBM
2017 🏆 **Cleanest Code at HackUVic**, Development Club at the U. of Victoria (judged by local companies)
2016 **Doctoral Fellowship (full tuition scholarship)**, University of Victoria
2014 **Master's Degree Fellowship (full tuition scholarship)**, Universidad Icesi
2014-2016 **Young Researcher Fellowship**, Colombian Department of Science, Technology, and Innovation
2014 **Student Loan Waiver**, Colombian Institute of Educational Credit and Technical Studies
2013 **Top ECAES Exam**, Colombian Institute for the Promotion of Higher Education
2009 **Bachelor's Degree Scholarship (25% tuition)**, Universidad Icesi
2011-2014 **Engineering Dean's list in semesters VI, VII, VIII, & IX**, Universidad Icesi

[1] This curriculum vitae was last updated on June 2, 2019. Download the latest version from migueljimenez.co/cv.pdf

Publications

Refereed Journal Articles

[J.1] Hugo Arboleda, Andrés Paz, **Miguel Jiménez**, and Gabriel Tamura. "Development and Instrumentation of a Framework for the Generation and Management of Self-Adaptive Enterprise Applications". en. In: *Ingeniería y Universidad* 20 (Dec. 2016), pp. 303–333. *Rank: Q3 SJR: 0.161*.

Refereed Conference Proceedings

[C.1] Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, **Miguel Jiménez**, and Hausi A. Müller. "UML-driven Automated Software Deployment". In: *Proceedings of the 28th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2018, pp. 257–268. *Rank: B1 (Qualis) Acceptance rate: 27%*.

[C.2] Prashanti Angara, **Miguel Jiménez**, Kirti Agarwal, Harshit Jain, Roshni Jain, Ulrike Stege, Sudhakar Ganti, Hausi A. Müller, and Joanna W. Ng. "Foodie Fooderson a Conversational Agent for the Smart Kitchen". In: *Proceedings of the 27th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2017, pp. 247–253. *Rank: B1 (Qualis) Acceptance rate: 27%*.

[C.3] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, and Hausi A. Müller. "Deployment Specification Challenges in the Context of Large Scale Systems". In: *Proceedings of the 27th Annual International Conference on Computer Science and Software Engineering (CASCON)*. IBM, 2017, pp. 220–226. *Rank: B1 (Qualis) Acceptance rate: 27%*.

[C.4] Hugo Arboleda, Andrés Paz, **Miguel Jiménez**, and Gabriel Tamura. "A framework for the generation and management of self-adaptive enterprise applications". In: *2015 10th Computing Colombian Conference (10CCC)*. 2015, pp. 55–62. *SJR: 0.114*.

Refereed Workshop Proceedings

[W.1] Jean-Michel Bruel and **Miguel Jiménez**. "DevOps'18 Education Panel". In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 221–226.

[W.2] **Miguel Jiménez**, Lorena Castaneda, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Joe Wigglesworth. "DevOps Round-Trip Engineering: Traceability from Dev to Ops and Back Again". In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 73–88.

[W.3] **Miguel Jiménez**, Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Nelly Bencomo. "An Architectural Framework for Quality-driven Adaptive Continuous Experimentation". In: *Proceedings of the IEEE/ACM Joint 4th International Workshop on Rapid Continuous Software Engineering and 1st International Workshop on Data-Driven Decisions, Experimentation and Evolution (RCoSE/DDrEE)*. In press. 2019.

[W.4] **Miguel Jiménez**, Luis F. Rivera, Norha M. Villegas, Gabriel Tamura, Hausi A. Müller, and Pilar Gallego. "DevOps' Shift-Left in Practice: An Industrial Case of Application". In: *Software Engineering Aspects of Continuous Development and New Paradigms of Software Production and Deployment*. Ed. by Jean-Michel Bruel, Manuel Mazzara, and Bertrand Meyer. Springer, 2019, pp. 205–220.

[W.5] **Miguel A. Jiménez**, Ángela V. Gómez, Norha M. Villegas, Gabriel Tamura, and Laurence Duchien. "A Framework for Automated and Composable Testing of Component-Based Services". In: *2014 IEEE 8th International Symposium on the Maintenance and Evolution of Service-Oriented and Cloud-Based Systems (MESOCA)*. 2014, pp. 1–10.

Contributed Talks and Posters

[P.1] **Miguel Jiménez**, Gabriel Tamura, and Hausi Müller. *Towards Software Engineering at Run-time Through Continuous Experimentation and Evolution*. Poster at 2019 CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities (CRA URMD), Waikoloa Village, Hawaii, United States. Mar. 2019.

[P.2] **Miguel Jiménez**, Gabriel Tamura, Hausi Müller, Joe Wigglesworth, and Ian Watts. *Model Transformation Issues for Round-trip Engineering of Deployment Specifications*. Poster at Joint Consortium for Software Engineering Research 2019 Spring Meeting (CSER) and 2nd Software Engineering for Machine Learning Applications (SEMLA), Montréal, Québec, Canada. May 2019.

[P.3] **Miguel Jiménez**, Gabriel Tamura, and Hausi Müller. *Continuous Deployment Specification for Large-Scale Systems*. Poster at the 28th Annual International Conference on Computer Science and Software Engineering (CASCON), Markham, ON, Canada. Oct. 2018.

[P.4] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, and Hausi Müller. *Round-trip Software Engineering in DevOps: Making the Infrastructure a Code Committer*. Poster at 2018 CRA Grad Cohort Workshop for Underrepresented Minorities + Persons with Disabilities (CRA URMD), San Diego, California, United States. Mar. 2018.

[P.5] **Miguel Jiménez**, Norha M. Villegas, Gabriel Tamura, Hausi Müller, Joe Wigglesworth, and Ian Watts. *DevOps Round-trip Software Engineering: On Traceability from Dev to Ops and back*. Talk at the Consortium for Software Engineering Research (CSER), Markham, ON, Canada. May 2018.

[P.6] **Miguel Jiménez**, Prashanti Angara, Harshit Jain, Kirti Agarwal, Roshni Jain, Hausi Müller, Ulrike Stege, and Joanna Ng. *Cognitive IoT Recipe Maven: Digital Expertise in the Kitchen*. Poster at Centre for Advanced Studies Technical Link Event (CASTLE), Markham, ON, Canada. May 2017.

[P.7] **Miguel Jiménez**, Hausi Müller, and Gabriel Tamura. *A DSL Approach For Dynamic Performance Monitoring and Deployment*. Petcha Kutcha presentation at the Consortium for Software Engineering Research (CSER), Markham, ON, Canada. Oct. 2016.

[P.8] **Miguel Jiménez**, Hausi Müller, and Gabriel Tamura. *A DSL Approach For Generating and Deploying Dynamic Performance Monitors for Self-Adaptive Software Systems*. Poster at the 26th Annual International Conference on Computer Science and Software Engineering (CASCON), Markham, ON, Canada. Oct. 2016.

Invited Talks

[T.1] **Miguel Jiménez**. *Continuous Value Delivery with DevOps (Spanish)*. Online webinar for university alumni, Universidad Icesi. Mar. 2019.

[T.2] **Miguel Jiménez**, Gabriel Tamura, and Hausi Müller. *Towards Continuous Assurance of Non-Functional Requirements Through Continuous Experimentation*. Presentation at the 2nd Workshop on DevOps and Software Analytics for Continuous Engineering and Improvement, Annual International Conference on Computer Science and Software Engineering (CASCON). Markham, Canada. Nov. 2018.

Research Experience

Jan 2018 - Present
Graduate Research Assistant
IBM Advanced Studies + Rigi Research Group, University of Victoria, Canada
Advised by Dr. Hausi Müller, Dr. Gabriel Tamura and Joe Wigglesworth (IBM)

Conduct research and collaborate with the development team of IBM Cloud Automation Manager to develop round-trip engineering mechanisms for infrastructure as code, and automate continuous experimentation for deployments on the cloud.

Jan 2014 - Aug 2016
Graduate Research Assistant
i2T/DRISO Research Group, Universidad Icesi, Colombia
Advised by Dr. Gabriel Tamura

- Identified challenges in dynamic performance monitoring of self-adaptive systems and proposed technical solutions following the SOA philosophy to advance the state of the art
- Designed and implemented two domain-specific languages for dynamic monitoring and distributed deployment
- Managed the computing resources of the i2T/DRISO research group's computing grid (15 physical machines)

Jun 2013 - Dec 2013 ***Research Assistant Intern***
i2T/DRISO Research Group, Universidad Icesi, Colombia
Advised by Dr. Gabriel Tamura

Implemented and conducted quantitative experiments for the matrix multiplication problem.

Spring 2012 ***Undergraduate Research Assistant***
i2T/DRISO Research Group, Universidad Icesi, Colombia
Advised by Lorena Castaneda

Learned about Service Component Architecture and migrated a MAPEK loop implementation from Apache Tuscany to FraSCAti.

Industry Experience

2015 ***Freelance Software Developer***
Carvajal Espacios S.A.S., Cali, Colombia

Developed a web application for the purchasing department to manage raw material catalogues and suppliers, as well as material search statistics for supporting managerial level decision-making.

2015 ***Freelance Software Developer***
Laboratorios LaFrancol S.A.S., Cali, Colombia

Developed a web application for the purchasing department to create online auctions and invite partner suppliers to bid.

2012 ***Freelance Software Developer***
SQL Soluciones Informaticas S.A.S., Cali, Colombia

Developed an information system for a premier trolley service for ticket management, printing and selling.

2009-2010 ***Software Developer***
SQL Soluciones Informaticas, Cali, Colombia

- Deployed and managed the corporate website, customer support portal and online store
- Developed a content management site for video tutorials and small scripts for a tax software
- Designed advertisement for digital and print marketing campaigns

Industry Collaborative Projects

2018 - Present ***Reverse Engineering Deployment Specifications from Running Systems***
CAS Fellowship Project. IBM + University of Victoria, Canada

Role: Lead Student
Joe Wigglesworth (Lead Contributor), Hausi Müller (Principal Investigator)

This project is concerned with the design of reverse engineering techniques to introspect deployed infrastructures and the generation of the representative deployment and configuration specifications. **I am currently working on** all the associated research and development activities.

2017 ***Cognitive IoT Recipe Maven***
CAS Fellowship Project. IBM + University of Victoria, Canada

Role: Lead Student
Joanna Ng (Lead Contributor), Hausi Müller (Principal Investigator)

This project aimed to develop software applications to exploit digital expertise in the modern kitchen based on integrated user, fridge and grocery store contexts. **I worked on** the deign and development of a conversational agent for the smart kitchen, and an Android application for the management of dietary restrictions.

2015 - 2016 ***Context-Driven Route Optimization: A Home-Health Case***
Technological Innovation Project. Colciencias + Carvajal T&S, Colombia

Role: Young Researcher
Diana Gonzalez and Oscar Mancipe (Lead Contributors), Gabriel Tamura (Principal Investigator)

This project aimed to optimize the route planning of a management software for home health. **I worked on** a test case generator for an adaptation to the asymmetric traveling salesman problem with time windows. Moreover, I contributed to the research and development activities related to online maps.

2014 - 2015 ***Processing of Large and Complex XML Documents***
Technological Innovation Project. Colciencias + Carvajal T&S, Colombia

Role: Young Researcher
Pilar Gallego (Lead Contributor), Gabriel Tamura (Principal Investigator)

This project aimed to improve a reference architecture of a product family for the processing of large data volumes. **I worked on** automating the monitoring, configuration and deployment of controlled architectural experiments.

Teaching and Mentoring Experience

2016-2018 ***Lead Graduate Teaching Assistant***
Fundamentals of Programming with Engineering Applications (CSC 111), University of Victoria
Instructor: Dr. Hausi Müller

- Lectured weekly labs and assisted students with programming and lab assignments
- Co-led weekly meetings and developed teaching material and quizzes
- Developed grade-buddy, a program to assist teaching assistants and professors in automating the marking of programming assignments
- Developed a multi-platform installation assistant to ease the installation of CLion and its dependencies on Windows, Mac and Linux
- Developed examgen, a program to generate examinations along with their solutions from a YAML input file. The resulting files are rendered to either LaTeX or Moodle. By creating examgen, we stopped printing **2800** quizzes and reduced marking time by **30h** per term
- Deployed and managed an online platform to host and mark programming assignments

Spring 2018 ***Graduate Teaching Assistant***
Assistance Centre in Computer Science, University of Victoria

Tutored students and assisted them with programming assignments in one-on-one sessions.

Fall 2016 ***Graduate Teaching Assistant***
Data Structures I (CSC 225), University of Victoria
Instructor: Dr. Ulrike Stege

Lectured weekly labs, developed scripts to automate marking and graded assignments.

2015 ***Technical Advisor***
Undergraduate degree project, Interactive Media Design Program - Universidad Icesi

Project: Knowledge management and dissemination: alternative soccer culture
Student: Juan David Flórez Bautista

2014 ***Undergraduate Degree Project Supervisor***
Undergraduate degree project, Interactive Media Design Program - Universidad Icesi

Project: Folii: natural and interactive encyclopedia mediated by citizen science
Students: Juan Pablo Pérez, Mauricio Alberto Toro

2014 ***Undergraduate Degree Project Co-Supervisor***
Undergraduate degree project, Interactive Media Design Program - Universidad Icesi

Project: An information system for bicycle transportation
Student: Claudia Ximena Barriga

Spring 2011 ***Undergraduate Teaching Assistant***
Data Structures and Algorithms, Universidad Icesi
Instructor: Angela Villota-Gomez

Graded assignments and assisted students during weekly labs.

Skills

The following is a list of selected skills.

- **Technical Skills**

  Architecture Design
  Containerized Applications
  Continuous Delivery
  Data mining (basic)
  Infrastructure Provision
  Infrastructure as Code
  Language Engineering
  Object Oriented Programming
  Performance Monitoring
  Service Component Architecture
  Software Deployment
  Web programming

- **Programming Languages**

  Java, Xtend
  JavaScript, CSS, HTML
  C
  Python
  Go
  C#
  Oz
  ShellScript

Service and Volunteering

2011-2012 ***Volunteer instructor for the Web Programming Club***
Universidad Icesi, Cali, Colombia

Developed teaching material and lectured students of the Systems Engineering and Interactive Media Design programs on HTML, CSS and JavaScript.

References

Dr. Hausi Müller (hausi@uvic.ca)
Associate Professor and Dean of Research
Department of Computer Science, University of Victoria

Dr. Gabriel Tamura (gtamura@icesi.edu.co)
Associate Professor
Department of ICT, Universidad Icesi

Dr. Lorena Castaneda (lcastane@gmail.com)
Software Developer
CityView

Dr. Norha M. Villegas (nvillega@icesi.edu.co)
Director of the Software Systems Engineering Professional Program
Department of ICT, Universidad Icesi